

# The Zoomigami Guide

By Ilan Garibi with edits by Wojtek Burczyk, Dasa Severova, and Gerardo G., among other origamists

## Preparation

### a. Camera

#### i. Top-down:

1. This is the best angle
2. Hands should come from the bottom of the screen.
3. See the suggestions for setting up your studio with the simple means you have at home at the end of this document.
4. The light should be overhead as well. An additional side point light may help with the visibility of the creases. Turn your paper slowly, and you will notice a moment when all invisible creases become well visible
5. Check your working area for the right shade for your camera.
6. Use a uniform background with a color that contrasts with that of the paper.
7. Check this doc cam:

[https://www.amazon.com/gp/product/B0784RZNKT/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o05\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B0784RZNKT/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1)

8. If you want to buy an economical webcam, make sure it doesn't have a fisheye lens, like wide-angle webcams, because it makes the edges of the paper look curved.

The Loetad 1080P webcam is a great option with zero fisheye image:

<https://www.loetad.net/product/webcam-with-microphone-1080p-hd-webcam-for-desktop-laptop-web-camera-living-streaming-webcam-usb-plug-and-play-video-calls-conference-online-class-zoom-meeting-noise-reduction>

The Yohoolyo 1080P webcam has very little fisheye image, and it comes with autofocus

<https://www.yohoolyo.net/product/webcam-1080p-full-hd-webcam-with-microphone-and-privacy-cover-living-streaming-web-camera-for-laptop-desktop-autofocus-usb-plug-and-play-video-calls-conference-online-class-zoom-meeting.html>

9. On Windows OS, if you wish to have a program for editing the webcam settings and nothing more, you can install one of the following options: CamooZ (Freeware):

<https://obsproject.com/forum/resources/camooz-save-restore-camera-settings.1271>

Webcam Settings for Windows (paid alternative):

<https://www.windowsapps.com/download/webcam-settings-for-windows>

10. The autofocus on certain webcams with the feature can become too jumpy and distracting. To fix that, place one of your hands on the desk and in the center of the frame, let the webcam focus it, and then deactivate the feature, for example, using one of the programs mentioned above. After that, the paper should stay in focus.

11. Take a few minutes before the workshop to edit the settings of your camera to make the paper and creases as visible and clear as possible.
- ii. Using a cellphone camera as a top-down camera:
    1. The best way to use a phone is to log in to the Zoom session via your phone.
    2. Do not use any other app, as it slows down the frame rate.
    3. Tilt the phone a little so the image stays in landscape mode.
    4. If you use your PC in parallel, mute one of them, and turn the speakers off. Otherwise, we all hear unbearable feedback.
  - iii. Frontal camera
    - 1. Use this option only if you have no other choice!**
    2. When using Zoom, left and right can sometimes look reversed on your screen, but not on everyone else's. You can check if that's the case by raising one hand and asking everyone which hand you raised.
    3. Make sure there is no light behind you - no one can see your face this way!
    4. Check that your paper doesn't have too much or too little light.
- b. Advanced features for the camera:**
- i. For overlays on your screen or double camera feed...
    1. <https://obsproject.com/>
    2. Two simpler options are <https://splitcam.com> and <https://manycam.com>
    3. Aside from those, it is now possible to do it directly on Zoom. For that, press the "Share" button at the bottom. After that, select the "advanced" tab at the top of the sharing window. Then, click on "Second camera", and finally choose the second option among the layouts on the right of the window. That option will show you as a cutout on the bottom left of the screen and on top of the image from your desk camera.
  - ii. TBC
- c. Background for folding:**
- i. Make sure it doesn't reflect light, that it has a uniform color, and that it contrasts with the colors of your paper. You can simply tape a matte paper on your table or desk to accomplish this.
  - ii. Mark with stickers the four points just outside the camera's field of view. You can also mark the center area, and make sure your hands always stay above it.
- d. Paper**
- i. **Most importantly**, always choose paper color that fits a video session, totally **disregarding** its beauty or relevance to the theme. **Do NOT use red/white colors to teach Santa!**
  - ii. Paper color -
    1. Avoid using white paper, or paper with one side white. A white paper is becoming too reflective. Use duo paper with good contrast in colors.
    2. **Avoid** any dark paper, especially black, blue, and brown, as the creases are invisible.

3. Red paper is **NOT** a good choice as well, since it saturates the image, and you cannot differentiate between two layers of paper.
  4. Orange, light green, and light blue are good colors.
  - e. Prefer matte papers that don't reflect light over glossy and shiny papers.
  - f. Do **NOT** use patterned paper.
  - i. Use a big piece of paper. Do not use the recommended size for folding, but for presenting!
  - ii. For small details, prepare even a bigger paper folded to the desired step to show.
- g. **Markers -**
- i. Prepare 3 markers of different colors, but make sure the ink won't come out the other side of the paper.
  - ii. Use bold markers. To be visible is more important than to be very precise. The thin marker remains invisible.
  - iii. Do **NOT** use a pencil or a pen!
- h. **Zoom login**
- i. Some of the areas may need a VPN to access Zoom (like China).
  - ii. In this case, try to log in to the web version of Zoom if it prompts that free users can not log in from your area.
- i. **For hosts only - Setting the Zoom meeting:**
- i. Use the waiting room option.
  - ii. Use the entry chime option.
  - iii. Ask in the invitation you send to everyone to log in with their real name: This link teaches how to do that in case someone doesn't know  
<https://teaching.nmc.edu/knowledgebase/changing-your-name-in-a-zoom-meeting/>
  - iv. This link teaches how to mute/unmute their microphones:  
<https://www.howtogeek.com/670311/how-to-mute-yourself-on-a-zoom-call/>
  - v. Explain how to activate/disable their webcams in case someone doesn't know.

## During the workshop

- j. **Teacher:**
- i. Make sure your PC does not run any other apps that take up your bandwidth!
  - ii. By default, Zoom reduces your camera resolution to 640 x 360; that's pretty low. To get the best resolution from your camera on Zoom, in the meeting, press the small arrow that's to the right of the video icon and then select "settings". Under the camera pop-up menu, check both "original ratio" and "HD". You won't notice the difference on your screen, but it significantly improves your image quality on everyone else's screens, and on the recording if there is one. However, if you have a weak Internet connection, then it's best to uncheck them both and keep the low resolution.
  - iii. If you want to go slow, teach the model on two sheets simultaneously! Meaning, show every step twice (once on each paper). Tell your students to look while you fold the first, and to fold while you fold the second. This will allow you to understand their pace.
  - iv. Say in advance what you are going to do BEFORE you do it. Then say it again while you are doing it.

- v. Avoid using indescribable words such as “ fold **this to this**”. Use definite points like “ fold the **right edge** to meet the **left corner**”. Remember that some students may not look at you when you talk, because they are still folding the previous step.
- vi. Move your hands slowly. Some will have a slow connection, and they see you like a slideshow.
- vii. Make sure you visibly show every step onscreen and in the center of the frame. Use the markers to show folds and reference points.
- viii. Encourage students to ask if they don’t understand a step
- ix. Slow students:
  1. Try to help, but only if it is one step back. For those who lag behind more than one step, do not go back.
  2. Suggest that they wait for the video (if you record and release one).
- x. Talk slowly (especially when you talk to an international audience in your native language). Sometimes the voice is distorted on the internet.
- xi. Check frequently if students have finished the step. Without direct contact with students, you will tend to be **too fast**.
- xii. Repeat the steps several times. It is probable that somebody finished the previous step when you showed it for the first time, or did not notice the fold or reference points properly.
- xiii. Note that the image on the screen is much smaller than your paper. It appears that all of your students are sitting in the last row.
- xiv. Use a bigger paper for the latest steps, when things are getting too small.
- xv. If you have a lot of precreases on a square paper, mark one of the visible points as a reference point, so if you rotate the paper, everyone can see it and refer to it.

k. **Hosts:**

- i. Have a moderator to make sure all who enter the meeting have the right to be there.
- ii. Make sure you have their right names.
- iii. Mute all when the teaching has started.
- iv. Zoom-bombing:
  1. Only share the Zoom meeting URL with the participants and only briefly before the meeting.
  2. Ask them to please not share the URL with anyone else.
  3. Right before the meeting, set screen sharing to only hosts: Click the up-facing carrot next to Share Screen and choose Advanced Sharing Options. There, choose to only let the host share.
  4. Learn how to place a problematic participant on hold: Find the video thumbnail of the person you want to put on hold. Click on their video image and select Start Attendee On Hold.

## Examples of camera and light settings

Beth Johnson:

### Lighting:

Here is what I did, but this will vary for everyone: I do not have good natural lighting, and this is also inconsistent, and my class was at night. So I set up all the artificial light. I had three main light sources - two close-ups and shining light sideways or bouncing (Light directly on the folding area made it difficult to see crease folds). I had one taller light that I covered with paper to diffuse. I blocked all natural light (you can see the sheet in front of my window on the right) and turned off the overhead light in the room. I think the color and type of bulb can make a lot of difference, too, something to consider.

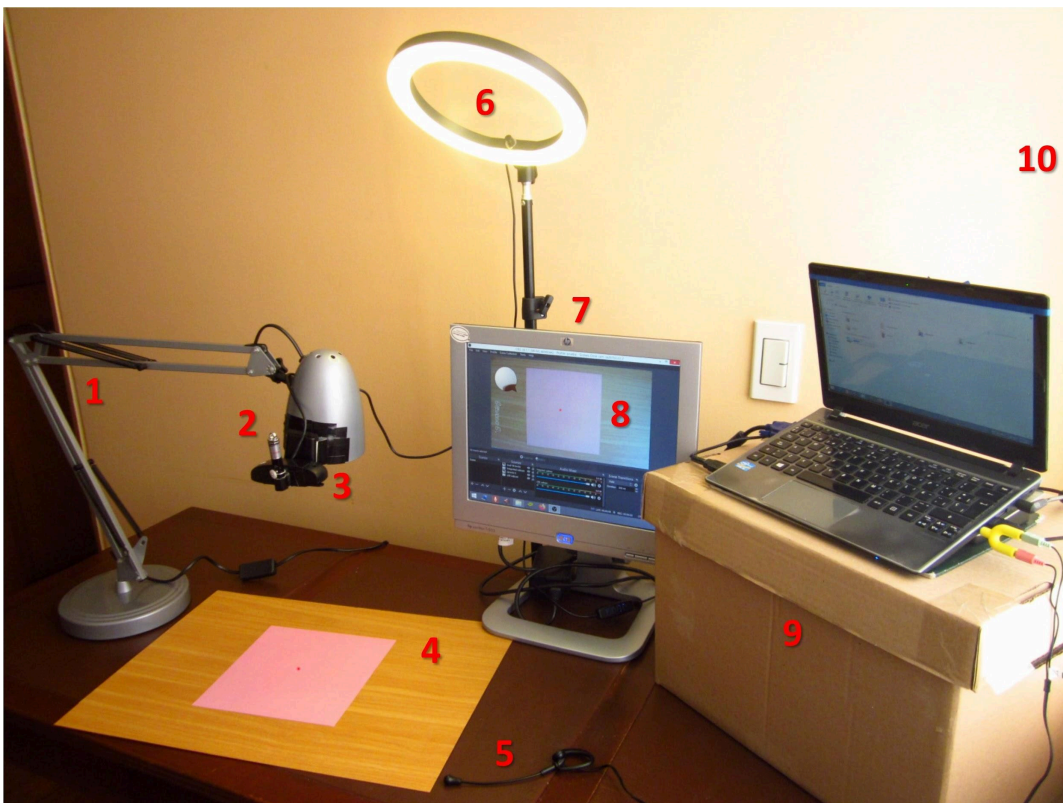
### Folding surface:

A neutral surface that can show paper contrast works well. But I have seen people use many different surfaces here, and as long as the lighting is good, I'm not sure it matters much (Maybe, just not sure).



Gerardo G.

1. By using a desk lamp as an arm for the webcam, I'm able to move it closer or farther from the paper. I don't use it as a light source when teaching origami.
2. I attached a laser pointer to the webcam by using duct tape to pinpoint the center of the webcam's frame. That way, I can keep my paper in the center of the frame as I fold. I use a shirt button and a wire to keep the laser pointer turned on for as long as I want.
3. A smartphone has a better camera than most webcams, but since I don't own one, I purchased the Yohoolyo 1080P webcam (good image plus autofocus). I made a pocket to attach the webcam to the desk lamp by using a piece of cardboard and duct tape.



4. Since the desk has a leather top and I can't properly fold on it, I place a Formica board on top. By placing the webcam correctly, the board's edges also give me an indication that helps me place the sheet straight within the frame.
5. The small headset allows me to place the microphone closer to my mouth, offering a clearer sound.
6. The ring light levels the lighting on my face and the paper. I set it that high, so it doesn't reflect on my glasses.
7. A second screen allows me to see other things while I keep the video call on the laptop, for example, diagrams or OBS Studio.
8. OBS Studio allows me to adjust the settings of my webcam, such as exposure, brightness, and contrast, among others, and also allows



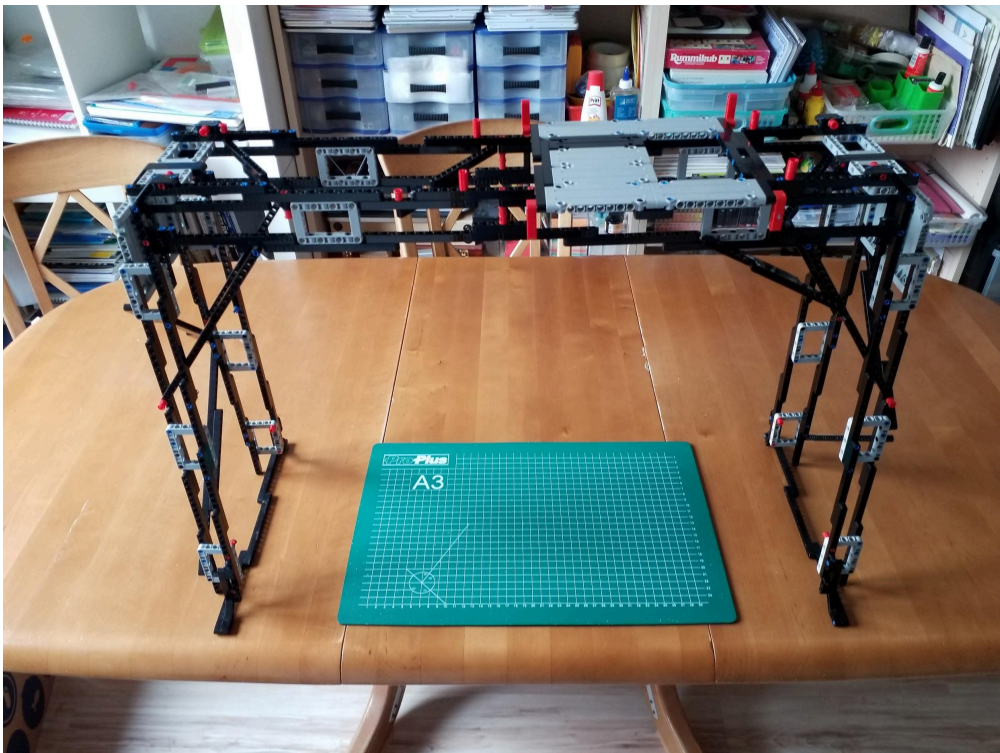
me to add the laptop's webcam (picture-in-picture).

9. A cardboard box lifts the laptop and its webcam to a more natural angle, just a tad higher than my face.
10. I receive sunlight from one side of the room, which I diffuse by using a window shade. This light generates shadows and highlights on the paper, making the creases and folds easier to see. I place the laptop next to the window, so people can see me better, instead of placing it on the other side of the desk and far from the window.

Miguel Gañán



Jose Meeusen  
Made from Lego parts!!



Winnie Leung



Usman Rosyidhi Setup:



Eliot Dupré set up, with a phone and a mirror attached to the phone, so you can see the screen!!

